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OCT 09 2007

Serial No. 09/738,591
60246-116**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Appellant: Jim Otter
Serial No.: 09/738,591
Filed: December 15, 2001
Group Art Unit: 1762
Examiner: Parker, Frederick John
Title: A METHOD MAKING A FILM WITH IMPROVED
WETTABILITY PROPERTIES

Mail Stop - Appeal Brief
Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REVISED APPEAL BRIEF

Dear Sir:

In response to the Notification mailed on 6 September 2007, Appellant hereby submits this revised appeal brief. The Appeal Brief fees were paid with the filing of a prior appeal brief on November 14, 2003. Any additional fees or credits may be charged or applied to Deposit Account No. 03-0835 in the name of Carrier Corporation.

Real Party in Interest

The real party in interest is Carrier Corporation, the assignee of the entire right and interest in this Application.

Related Appeals and Interferences

The subject application was previously appealed on 14 August 2003 (Appeal No. 2004-1869), which resulted in a Board decision on 30 September 2004 (see Related Proceedings Appendix). In subsequent prosecution, the subject application was again appealed on 3 January 2006. The Examiner withdrew finality of the rejections in response to the Appeal Brief.

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60246-116**Status of Claims**

Claims 1-3, 5, 7, 22, 25-27, 29-40, and 42 are pending in the application. Claims 27 and 40 are allowed and not appealed. Claims 25, 29-32, and 36 stand rejected and are not appealed. Claims 1-3, 5, 22, 26, 33-35, 37-39, and 42 stand rejected and are appealed.

Status of Amendments

There are no unentered amendments.

Summary of Claimed Subject Matter

As shown in Figure 1 of the application, this invention relates to a method for making a film for use with a heat transfer component 100. The method includes applying a plurality of polar particulates 16 to a surface 18 of a heated film 12, then embedding the plurality of polar particulates 16 into the surface 18 of the heated film 12 with a first roller 24, regulating a temperature of the roller 24 to regulate a temperature of the film 12, and then adding the film 12 to the heat transfer component 100 (page 4, line 14 to page 5, line 2). This basic method is set forth in independent claim 1 as follows.

Independent claim 1 recites a method for making a film including applying a plurality of polar particulates to a surface of a heated film (page 4, lines 14-20; page 6, lines 4-6; page 6, lines 10-12), then embedding the plurality of polar particulates into the surface of the heated film with a first roller (page 4, lines 14-20); regulating a temperature of the first roller to resist cooling of the film (page 4, lines 18-20); and then adding the film to the heat transfer component (page 5, lines 18-23).

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60246-116**Grounds of Rejection to be Reviewed on Appeal**

- I. Claim 1 was rejected under 35 U.S.C. §112, first paragraph as failing to comply with the written description requirement because the claim contained subject matter deemed by the examiner as new matter.
- II. Claims 1-3, 5, 22, 26, 33-35, 37-39, and 42 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 4,848,314 to Bentley, et al. (hereafter "Bentley") in view of U.S. Patent 4,421,789 to Kaneko, et al. (hereafter "Kaneko") and further in view of U.S. Patent 2,899,288 to Barclay (hereafter "Barclay") and further in view of U.S. Patent 5,728,424 to Walling (hereafter "Walling") and U.S. Patent 3,450,585 to Takagi (hereafter "Takagi").
- III. Claim 7 was rejected under 35 U.S.C. 103(a) as being unpatentable over Bentley, in view of Kaneko and further in view of Barclay and further in view of Walling and Takagi and further in view of U.S. Patent 6,132,801 to Linford (hereafter "Linford").

Arguments**I. Rejection of Claim 1 Under §112, First Paragraph**

The Examiner interprets the limitation of having the first roller "resist cooling of the film" as being new matter. The Examiner further states that to "resist cooling of the film" can only be interpreted to mean that cooling is prevented, and preventing cooling is not supported in the application. Respectfully, Appellant disagrees because the Examiner's interpretation of the term "resist cooling" is overly narrow and contrary to a broader example within the application. For example, the application [page 4, 19-20] supports broader use of the term "resist cooling" by describing that "the first smaller roller 24 is controlled to prevent the film from *cooling too fast*" [emphasis added]. The "cooling too fast" implies that there is indeed a degree of cooling that occurs. That is, the smaller roller 24 controls the cooling and thereby "resists cooling," contrary to the Examiner's interpretation. Thus, the term "resist cooling" is supported in the application and is not new matter. Accordingly, the rejection should be reversed.

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60246-116**II. Rejection of Claims 1-3, 5, 22, 26, 33-35, 37-39, and 42 Under §103(a)****(a) Claims 1-3, 5, 22, 26, 33-35, 37-39, and 42**

There is no motivation to combine Walling and Takagi because one of ordinary skill in the art would not even have looked to the Takagi reference to embed polar particles on the surface of a film. In Takagi, the heated upper roller 1' is used to melt synthetic resin powder that is then deposited onto the surface of the sheet. Thus, even though the upper roller 1' of Takagi is heated, it operates to spread melted resin on the sheet, not to embed particles. Therefore, even if one was looking to improve embedding of the particles in Walling, they would not expect to succeed in doing so based on Takagi because Takagi does not address the problem of embedding particles. For this reason, the rejection should be reversed.

(b) Claim 42

Additionally, regarding claim 42, the Examiner contends that, given the suggestion in Walling of a roller using heat, one would have used the heated upper roller 1' and cooled lower roller 1 of Takagi in place of the rollers 40, 42 of Walling "to provide an improved method of imbedding particles." Respectfully, Applicant disagrees for the below reasons.

(i) The stated motivation that the combination would "provide an improved method of imbedding particles" is insufficient to support a *prima facie* 103 rejection. The Examiner is speculating without any sound reasoning or evidentiary basis that the proposed modification would result in the goal of improved embedding of the particles. Indeed, the rollers 1' and 1 of Takagi are not even used for embedding particles. Therefore, Takagi does not support the Examiner's conclusion that using a heated upper roller would improve embedding particles. The only teaching regarding embedding particles comes from Walling, which teaches using *heated top and bottom rollers* (see col.5, lines 57-61). Using a cooled lower roller to embed particles would therefore apparently be contrary to the teaching in Walling of using two heated rollers to effectively bond particles to a membrane. Thus, the Examiner's conclusion that using a cooled lower roller and a heated upper roller would improve embedding cannot be sustained and is insufficient to establish *prima facie* obviousness. For this reason, the rejection should be reversed.

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(ii) Additionally, the Examiner is using impermissible hindsight to recreate Appellant's invention. Using a heated roller on the side of the film with the particles and another roller on the other side of the film to cool the film is only known through the teachings of Appellant's disclosure. The Examiner is attempting to recreate this feature of Appellant's claim by arbitrarily choosing to substitute the rollers 1', 1 of Takagi for the rollers 40, 42 of Walling without any reason to do so. The mere fact that Takagi discloses a heated roller 1' and a cooled roller 1 for some other purpose besides embedding particles does not mean that one would use the rollers 1', 1 to embed particles and does not suggest that using the rollers 1', 1 would "provide an improved method of imbedding particles." Therefore, it is apparent that the Examiner is using the teachings of Appellant's disclosure in hindsight to recreate the limitations of the claim. For this additional reason, the rejection should be reversed.

III. Rejection of Claim 7 under §103(a)

The Examiner interprets Linford as teaching applying coatings on particles to allow a more robust coating attachment in microparticle/polymer composite materials to prevent debonding of the particles. The Examiner then argues that it would have been obvious to modify the particles of Kaneko to include the coating of Linford to provide a stronger attachment of the particles to the base. Respectfully, Appellant disagrees because there would be no motivation to modify the particles of Kaneko with the coating of Linford, for use in the heat exchanger of Bently.

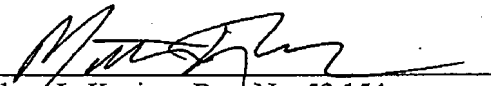
The Examiner has apparently overlooked that the function of the particles in the heat exchanger is to provide surface wettability for water removal. Contrary to this goal, the coating of Linford is hydrophobic (see col. 3, lines 53-57), not hydrophilic for the needed wettability. Moreover, the coating of Linford would completely cover and conceal the underlying particle (see col. 6, lines 6-8 describing grinding the silicon in the coating agent, which would completely coat the ground particles). Thus, modifying the polar particles of Kaneko using the coating of Linford would conceal the polar particles and thereby destroy the function of the particles to provide wettability. For this reason, one would not be motivated to combine the references as the Examiner suggests, and the rejection should be reversed.

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CLOSING

For the reasons set forth above, the final rejection of the claims is improper and should be reversed. Appellant respectfully requests such an action.

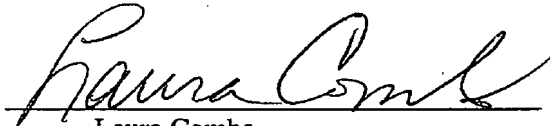
Respectfully Submitted,


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Dated: October 9, 2007

CERTIFICATE OF TRANSMISSION UNDER 37 CFR 1.8

I hereby certify that this correspondence is being facsimile transmitted to the United States patent and Trademark Office, fax number (571) 273-8300, on October 9, 2007.


Laura Combs

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CLAIM APPENDIX

1. A method for making a film for use with a heat transfer component comprising the steps of:
applying a plurality of polar particulates to a surface of a heated film;
then embedding the plurality of polar particulates into the surface of the heated film with a first roller;
regulating a temperature of the first roller to resist cooling of the film; and
then adding the film to the heat transfer component.
2. The method as recited in claim 1 wherein the film is thermoplastic.
3. The method as recited in claim 1 further comprising the step of cooling the film after the step of regulating the temperature of the first roller.
5. The method as recited in claim 1 further including the step of applying an adhesive substance to the surface of the film, wherein the step of embedding the plurality of polar particulates comprises pressing the plurality of polar particulates into the adhesive substance with the first roller.
7. The method as recited in claim 1 further comprising the step of coating an outer surface of the plurality of polar particulates with a coating.
22. The method as recited in claim 1 wherein the film is one of polyolefin, polyester, polyetherketon, polyetheretherketone, polysulfone, polyethersulfone, polytetrafluoroethylene and fluorinatedhydrocarbon.
26. The method as recited in claim 1 further including the step of employing the plurality of polar particles to increase a surface energy of the film.
33. The method as recited in claim 1 further including the step of using the heat transfer component to exchange heat between a first fluid and a second fluid.

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34. The method as recited in claim 33 wherein the step of using the heat transfer component forms a liquid condensate.
35. The method as recited in claim 1 wherein the heat transfer component is a condensing heat exchanger.
37. The method as recited in claim 1 wherein the plurality of particles are silica.
38. The method as recited in claim 1 further including the step of extruding the heated film.
39. The method as recited in claim 42 further including the step of urging the film against the second roller with a third roller to cool the film.
42. The method as recited in claim 1, further including the steps of passing the heated film with said plurality of polar particles between the first roller and a second roller such that the surface faces in a direction toward the first roller, and regulating a temperature of the second roller to cool the film.

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EVIDENCE APPENDIX

None.

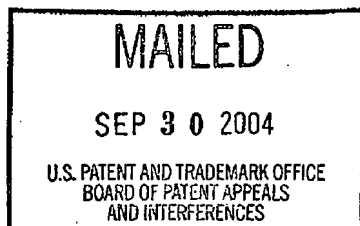
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RELATED PROCEEDINGS APPENDIX

Board Decision for Appeal No. 2004-1869.

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

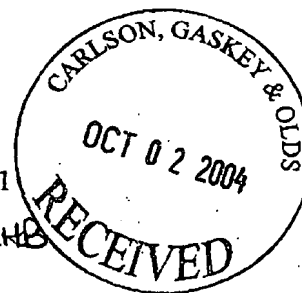
BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JIM OTTER

Appeal No. 2004-1869
Application No. 09/738,591

60246-116

ON BRIEF



Before OWENS, TIMM, and JEFFREY T. SMITH, *Administrative Patent Judges*.
TIMM, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal involves claims 1-5, 7, 20-23, 25, 26, and 28. Claims 8-19 have been withdrawn by the Examiner. Claim 27 has been allowed. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 134.

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INTRODUCTION

The claims are directed to a method for making a film for use with a heat transfer component. Claims 1, 5, 7, and 21 are illustrative:

1. A method for making a film for use with a heat transfer component comprising the steps of:

applying a plurality of polar particulates to a surface of a film;
then adhering said plurality of polar particulates to said surface of said film; and
then adding said film to said heat transfer component.

5. The method as recited in claim 1 further including the step of applying an adhesive substance to said surface of said film, and wherein the step of adhering said plurality of polar particulates comprises pressing said plurality of polar particulates into said adhesive substance.

7. The method as recited in claim 1 further comprising the step of coating an outer surface of said plurality of polar particulates with a coating.

21. The method as recited in claim 1 wherein said plurality of polar particulates are one of alumina, zirconia, wollastonite, talc, and titanium dioxide.

As evidence of unpatentability, the Examiner relies upon the following prior art

references:

McCulloch et al. (McCulloch)	3,973,510	Aug. 10, 1976
Kaneko et al. (Kaneko)	4,421,789	Dec. 20, 1983
Bentley	4,848,314	Jul. 18, 1989
Hayakawa et al. (Hayakawa)	6,013,372	Jan. 11, 2000
Linford	6,132,801	Oct. 17, 2000

The specific rejections are as follows:

1. Claims 1-4, 20, 22, 23, 26 and 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bentley in view of Kaneko (Answer, pp. 3-4).

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2. Claims 5 and 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bentley in view of Kaneko and further in view of McCulloch (Answer, p. 5).
3. Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Bentley in view of Kaneko and further in view of Linford (Answer, pp. 5-6).
4. Claims 21 and 25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bentley in view of Kaneko and further in view of Hayakawa (Answer, pp. 6-7).

We affirm the decision of the Examiner with respect to all four rejections. In so doing, we incorporate the reasoning of the Examiner provided in the Answer and add the following.

OPINION

Obviousness of Claims 1-4, 20, 22, 23, 26, and 28

The Examiner rejects claims 1-4, 20, 22, 23, 26, and 28 as obvious over Bentley in view of Kaneko. The claims stand or fall together (Brief, p. 3). We select claim 1 to represent the issues on appeal.

Claim 1 is directed to a method for making a film for use with a heat transfer component. In the method, a plurality of polar particulates are applied and bonded to the surface of a film prior to adding the film to the heat transfer component. There is no dispute that Bentley describes adding a film to a heat transfer component as claimed. According to Appellant,

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Bentley teaches "a condensing furnace having a thin layer of a corrosion resistant material adhesively bonded to a metal blank (Brief, p. 3)." The condensing furnace is a heat exchanger part and the corrosion resistant material is a thermoplastic polymer film (Answer, p. 3). The Examiner acknowledges that Bentley is silent towards the use of polar particulates on the sheet material (Answer, p. 3).

The Examiner cites Kaneko for its teaching of applying, by lamination, a similar corrosion resistant polymer film to heat exchanger parts (Final Rejection, p. 4; *see also* Answer, p. 3). In addition, Kaneko teaches applying polar silica particulates, in any convenient manner, to a polymer coated metal substrate in order to increase the wettability of the surface and hence increase the process efficiency (Answer, p. 3).

Appellant points out that the claims require applying and adhering the polar particulates to the surface of the film *prior to* applying the film to the heat exchanger component (Brief, p. 4). Appellant argues that "[i]f Kaneko and Bentley could be combined, the combination at best would teach adding the polar particulates to the film **after** the film is applied to the heat exchanger." (Brief, p. 4). On this basis, Appellant argues that neither reference includes a suggestion of applying the particulates in the order claimed (Brief, p. 4).

We are not convinced by Appellant's argument. In making a determination of obviousness, one must look at what the combined teachings of the references would have suggested to those of ordinary skill in the art. As stated in *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871,881 (CCPA 1981):

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The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.

Here, the combined teachings of Bentley and Kaneko would have suggested applying the polar particulates of Kaneko to the preformed film of Bentley. That the application may be accomplished before or after lamination of the film to the metal substrate is apparent from the process of Bentley. Bentley describes a process of laminating a polymer film onto the metal substrate of a heat transfer component to provide corrosion resistance (Bentley, col. 1, ll. 64-68 and col. 4, ll. 26-42). One of ordinary skill in the art practicing the process of Bentley utilizes a preformed polymer film. The preformed film described in Bentley is in its final chemical form before lamination to the metal substrate (Bentley, col. 4, ll. 26-33). Bentley thus presents a surface upon which silica particulate will adhere before the film is laminated to the metal substrate.

We conclude that the Examiner has established a *prima facie* case of obviousness with respect to the subject matter of claims 1-4, 20, 22, 23, 26 and 28 which has not been sufficiently rebutted by Appellant.

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Obviousness of Claims 5 and 28

The Examiner rejects claims 5 and 28 as obvious over Bentley in view of Kaneko and further in view of McCulloch. The claims stand or fall together (Brief, p. 3). We select claim 5 to represent the issues on appeal.

Claim 5 further limits claim 1 to require applying an adhesive substance to the surface of the film and that the step of adhering the plurality of polar particulates comprises pressing the plurality of polar particulates into the adhesive substance. The Examiner finds that Bentley and Kaneko are silent towards applying the polar particulates by pressing them into an adhesive applied to the surface of the polymer film (Answer, p. 5). The Examiner cites McCulloch for its teaching of applying silica particulates to an adhesive coated surface by blowing the particulates onto the tacky adhesive coating which necessarily presses the particulates into the adhesive (Answer, p. 5).

Appellant argues that there is no suggestion to employ a tacky adhesive layer in the combination of Bentley and Kaneko in order to adhere the silica particulates to the polymer film because Kaneko teaches applying the silica particulates to the film as a solution and moisture is removed to adhere the silica particles to the film (Brief, p. 5; Reply Brief, p. 2). We do not agree. Kaneko discloses that the silica particulates can be applied to the polymer film, in any convenient manner, including as a powder (Answer, p. 9). It is well settled that with regard to the issue of obviousness, the combined teachings of the prior art as a whole must be considered. *EWP Corp. v Reliance Universal, Inc.*, 755 F.2d 898, 907, 225 USPQ 20, 25 (Fed. Cir.), cert.

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denied, 474 U.S. 843 (1985). In addition, a reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in their art, including non-preferred embodiments. *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 807, 10 USPQ2d 1843, 1847 (Fed. Cir. 1989). Appellant focuses on the preferred embodiment of Kaneko of applying the silica particulates as a solution and ignores the broader teachings of Kaneko and, additionally, ignores the teachings of McCulloch. Appellant has failed to convince us of reversible error on the part of the Examiner.

We conclude that the Examiner has established a *prima facie* case of obviousness with respect to the subject matter of claims 5 and 28 which has not been sufficiently rebutted by Appellant.

Obviousness of Claim 7

The Examiner rejects claim 7 as obvious over Bentley in view of Kaneko and further in view of Linford.

Claim 7 further limits claim 1 to require coating an outer surface of the plurality of polar particulates.

The Examiner finds that Bentley and Kaneko are silent towards coating the outer surface of the polar silica particulates (Answer, p. 6). The Examiner cites Linford for its teaching of applying a polymer coating to silica particulates as a coupling agent when embedding particulates in a polymer or plastic to prevent de-bonding (Answer, p. 6).

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Appellant argues that there is no suggestion to employ an adhesive polymer coating in the combination of Bentley and Kaneko in order to adhere the silica particulates to the polymer film because Kaneko teaches applying the silica particulates to the film as a solution (Brief, p. 5; Reply Brief, p. 2). As discussed above in relation to claim 5, Applicant does not address the finding of the Examiner with regard to Kaneko that the silica particulates can be applied in any convenient manner including as a powder (Answer, p. 10). Appellant again fails to convince us of reversible error on the part of the Examiner.

Appellant further argues that the silica particulates taught in Kaneko form a hydrophilic surface and that if the silica particulates are coated then the surface would no longer be hydrophilic and the effect of increased wettability would be lost (Brief, pp. 5-6). It is noted that the specification teaches using a surface treatment (coating) for the particulates either to enhance adhesion of the particulates to the polymer film or to enhance wettability and that any coating can be utilized to enhance adhesion or wettability (page 6, lines 4-9). Linford teaches a wide variety of polymers for coating the silica particulates, some of which are hydrophilic (Linford, col. 4, ll. 60-67) and one skilled in the art would have had the requisite knowledge needed to determine what type of polymer to utilize for coating the silica particulates to ensure adequate adhesion to the polymer film and provide the desired hydrophilic nature of the surface in order to increase the wettability of the film. Appellant has not convinced us that one of ordinary skill in the art would not have had the required knowledge to select an appropriate polymer for coating the silica particulates.

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We conclude that the Examiner has established a *prima facie* case of obviousness with respect to the subject matter of claim 7 which has not been sufficiently rebutted by Appellant.

Obviousness of Claims 21 and 25

The Examiner rejects claims 21 and 25 as obvious over Bentley in view of Kaneko and further in view of Hayakawa. The claims stand or fall together (Brief, p. 3). We select claim 21 to represent the issues on appeal.

Claim 21 further limits claim 1 to require that the plurality of polar particulates are one of alumina, zirconia, wollastonite, talc, and titanium dioxide.

The Examiner finds that Bentley and Kaneko are silent towards applying polar particulates from one of the claimed list. The Examiner cites Hayakawa for its teaching of applying polar titanium dioxide (titania) particulates alone, or in combination with silica, to fins of a heat exchanger to increase the wettability of the fin surface (Answer, pp. 6, 11).

Appellant argues that Kaneko teaches that the silanol groups of the silica particulates provide a hydrophilic surface and that titanium dioxide particulates would not have such silanol groups (Brief, p. 6).

We agree with the Examiner's findings and conclusions provided in the Answer that while the titanium dioxide particulates do not contain silanol groups, the prior art recognizes that titanium dioxide performs the same function for the same application.

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